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(54) **PRODUCTION OF SEMI-HOT FORGED
NON-HEAT TREATED STEEL MATERIAL
EXCELLENT IN YIELD STRENGTH, TOUGHNESS,
AND FATIGUE CHARACTERISTIC**

(57) Abstract:

PURPOSE: To obtain a semi-hot forged non-heat treated steel material excellent in tensile strength, toughness, fatigue characteristic, and machinability by subjecting a steel, in which the contents of C and V are regulated to specific proportions, to semi-hot forging and then to aging treatment.

CONSTITUTION: A steel stock, which has a composition containing, by weight, 0.15-0.50% C, 0.005-2.00% Si, 0.40-2.00% Mn, 0.01-0.10% S, 0.0005-0.050% Al,

0.003-0.050% Ti, 0.0020-0.0200% N, and 0.20-0.70% V or further containing 0.02-1.50% Cr and/or 0.02-1.00% Mo, 0.001-0.20% Nb, or 0.05-0.30% Pb and/or 0.0005-0.01% Ca, independently or in combination, is used. This steel stock is heated to a temp. not lower than the Ac_3 point, semi-hot forged at 750-900°C finishing temp., and cooled. Machinability can be provided by forming a fine structure in which ferrite + pearlite comprises $\leq 90\%$, and further, ferrite is strengthened by V carbide by performing aging treatment at 200-700°C and fatigue characteristic, yield ratio, and toughness can be improved without deteriorating machinability.

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